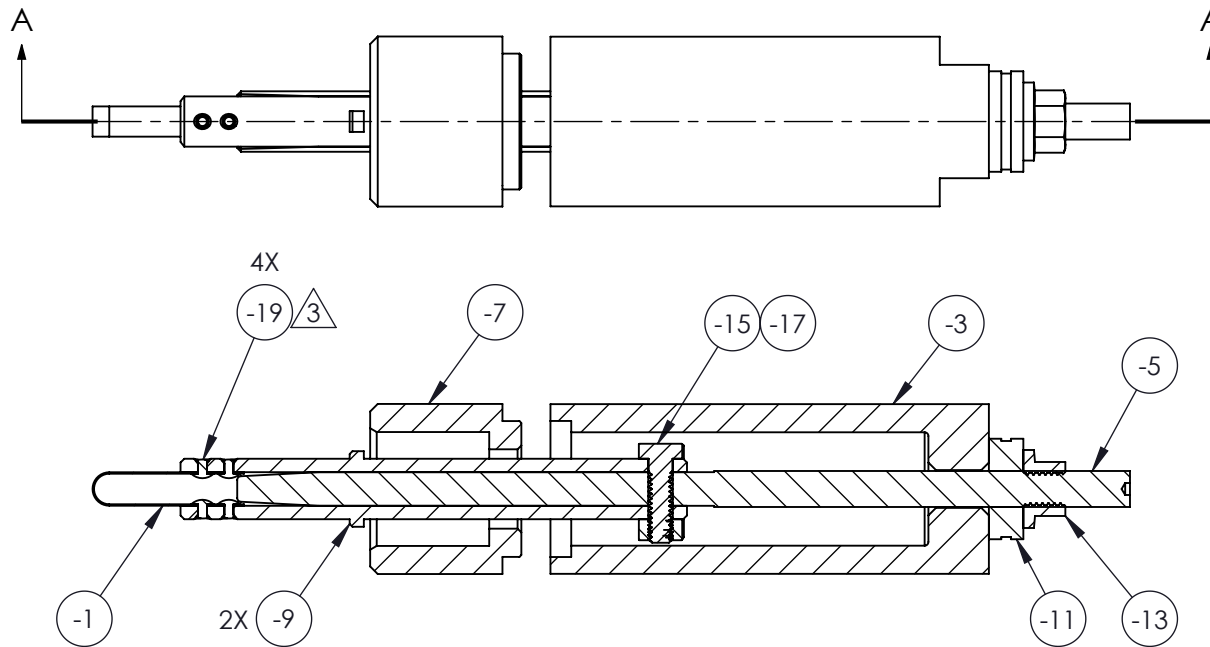


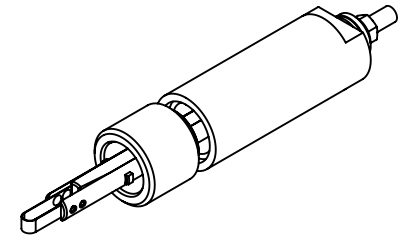
This drawing, specifications, and concepts contained here in are the sole property of Dart Aerospace, and may not be reproduced or used in any fashion without the prior written permission of Dart Aerospace Eugene, OR.

REVISIONS					
REV	ECR	DESCRIPTION	DATE	INITIAL	APPROVED
1		-107 CH'D -107 MATERIAL THICKNESS FROM .011 TO .015 CH'D MATERIAL FROM SPERING STEEL TO 301 S.S., ADDED MISSING Ø.094 DIM, ADDED FORMED VIEWS. -135 CH'D HEAT TREAT FROM RC 30-36 TO RC 38-42.	1/5/2015	RJC	SE
2	14-0230	MADE SEPARATE DRAWING FOR THIS TOOL FROM KIT RBW109-3130-82-139.	1/19/2015	RJC	JAG

**SEE ATTACHED DEVIATION**



SECTION A-A



**UNDER REVIEW**

URF 19-939 19.10.23 (VM)

**NOTE:**

1. REF. AGUSTA T/N: 109-3130-82-103.
2. PART OF KIT RBW109-3130-82-139.
3. SAND OUTSIDE SMOOTH WITH SURFACE.

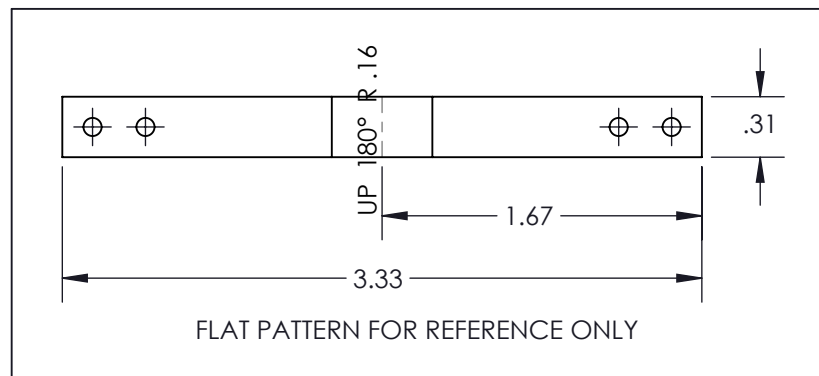
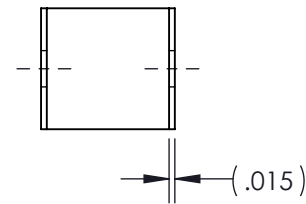
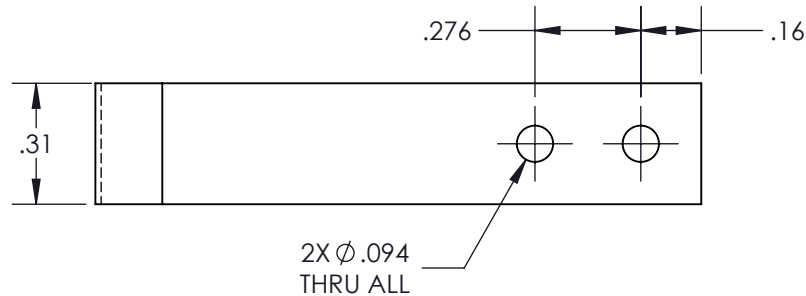
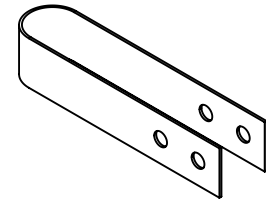
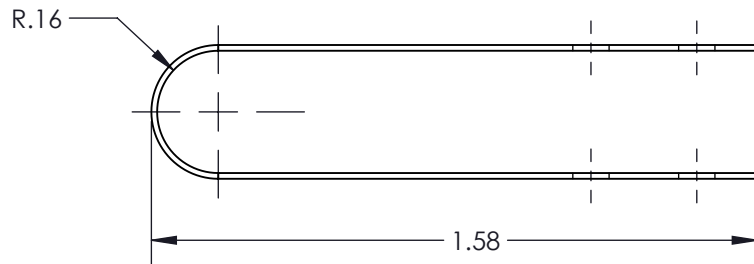
ASSY QTY	ASSY QTY	B/O	Part #	UNIT QTY	Description	Material	B/O INFORMATION OR SPECIFICATIONS	PG.
			-1	1	SPRING	301 S.S.		2
			-3	1	HOUSING	6061		3
			-5	1	EXTRACTOR ROD	4140/4142		4
			-7	1	SMALL HOUSING	6061		5
			-9	2	HALF CLAMP	4140/4142		6
		B/O	-11	1	BANDED THRUST BEARING	STEEL	Ø3/8 I.D. (REID SKF-9040)	1
		B/O	-13	1	COLLAR NUT	STEEL	3/8-16 UNC (REID #FNC-3)	1
		B/O	-15	1	HEX HEAD CAP SCREW	STEEL	1/4-28 UNF (SPENCER AIRCRAFT #AN4-7A)	1
		B/O	-17	1	HEX NUT	STEEL	1/4-28 UNF (SPENCER AIRCRAFT #AN315-4)	1
		B/O	-19	4	RIVET	ALUMINUM	Ø3/32 X 1/4 (MCMaster-CARR #97484A055)	1

<b>DART</b> AEROSPACE	
TITLE <b>TAIL ROTOR BUSHING REMOVAL TOOL</b>	
DWG NO. <b>RBW109-3130-82-103</b>	REV <b>2</b>
MAT'L UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES .XXX ± .005 FRACTIONS ± 1/8 .XX ± .01 ANGLES ± 5° .X ± .1	DRAWN BY: <b>PERRITT</b> APPROVED: <i>D Weil</i> HEAT TREAT FINISH SPEC
1. BREAK ALL SHARP EDGES .015 x 45° OR .015R 2. DIMENSIONAL LIMITS APPLY AFTER PLATING	
SCALE <b>1:2</b>	DATE <b>8/26/2014</b>
SHEET 1 OF 6	

This drawing, specifications, and concepts contained here in are the sole property of Dart Aerospace, and may not be reproduced or used in any fashion without the prior written permission of Dart Aerospace Eugene, OR.

REVISIONS					
REV	ECR	DESCRIPTION	DATE	INITIAL	APPROVED
1		-107 CH'D -107 MATERIAL THICKNESS FROM .011 TO .015 CH'D MATERIAL FROM SPERING STEEL TO 301 S.S., ADDED MISSING Ø.094 DIM, ADDED FORMED VIEWS.	5/7/12	RJC	SE

**SEE ATTACHED DEVIATION**



**UNDER REVIEW**

URF 19-939 19.10.23 (VM)

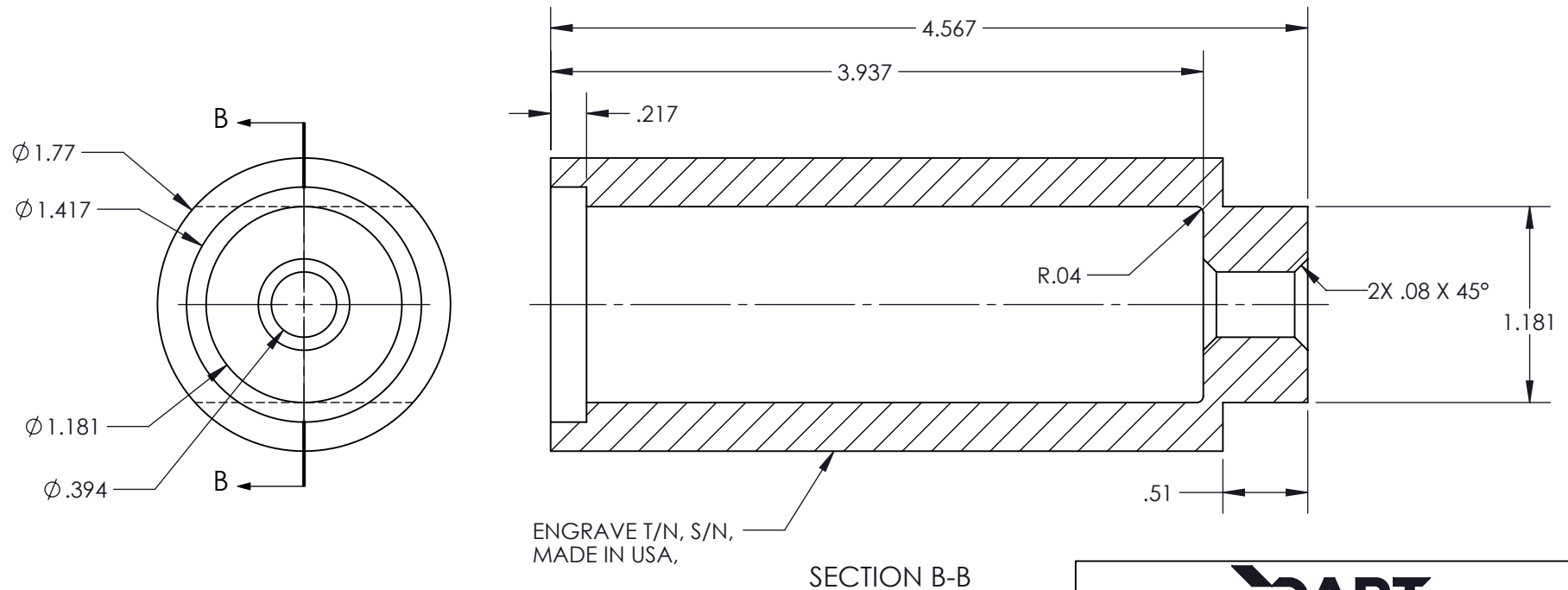
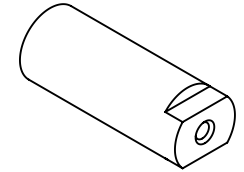
①  
SPRING

<b>DART AEROSPACE</b>	
TITLE TAIL ROTOR BUSHING REMOVAL TOOL	
DWG NO. RBW109-3130-82-103-1	REV <b>2</b>
MAT'L 301 S.S.	DRAWN BY: PERRITT
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES	APPROVED <i>D Weil</i>
.XXX ± .005 FRACTIONS ± 1/8	HEAT TREAT
.XX ± .01 ANGLES ± 5°	FINISH
.X ± .1	SPEC
1. BREAK ALL SHARP EDGES .015 x 45° OR .015R	USED ON MODEL
2. DIMENSIONAL LIMITS APPLY AFTER PLATING	AW109, AW119
SCALE 2:1	DATE 8/26/2010
SHEET 2 OF 6	

This drawing, specifications, and concepts contained here in are the sole property of Dart Aerospace, and may not be reproduced or used in any fashion without the prior written permission of Dart Aerospace Eugene, OR.

REVISIONS				
REV	ECR	DESCRIPTION	DATE	INITIAL

**SEE ATTACHED DEVIATION**



**UNDER REVIEW**

URF 19-939 19.10.23 (VM)

③

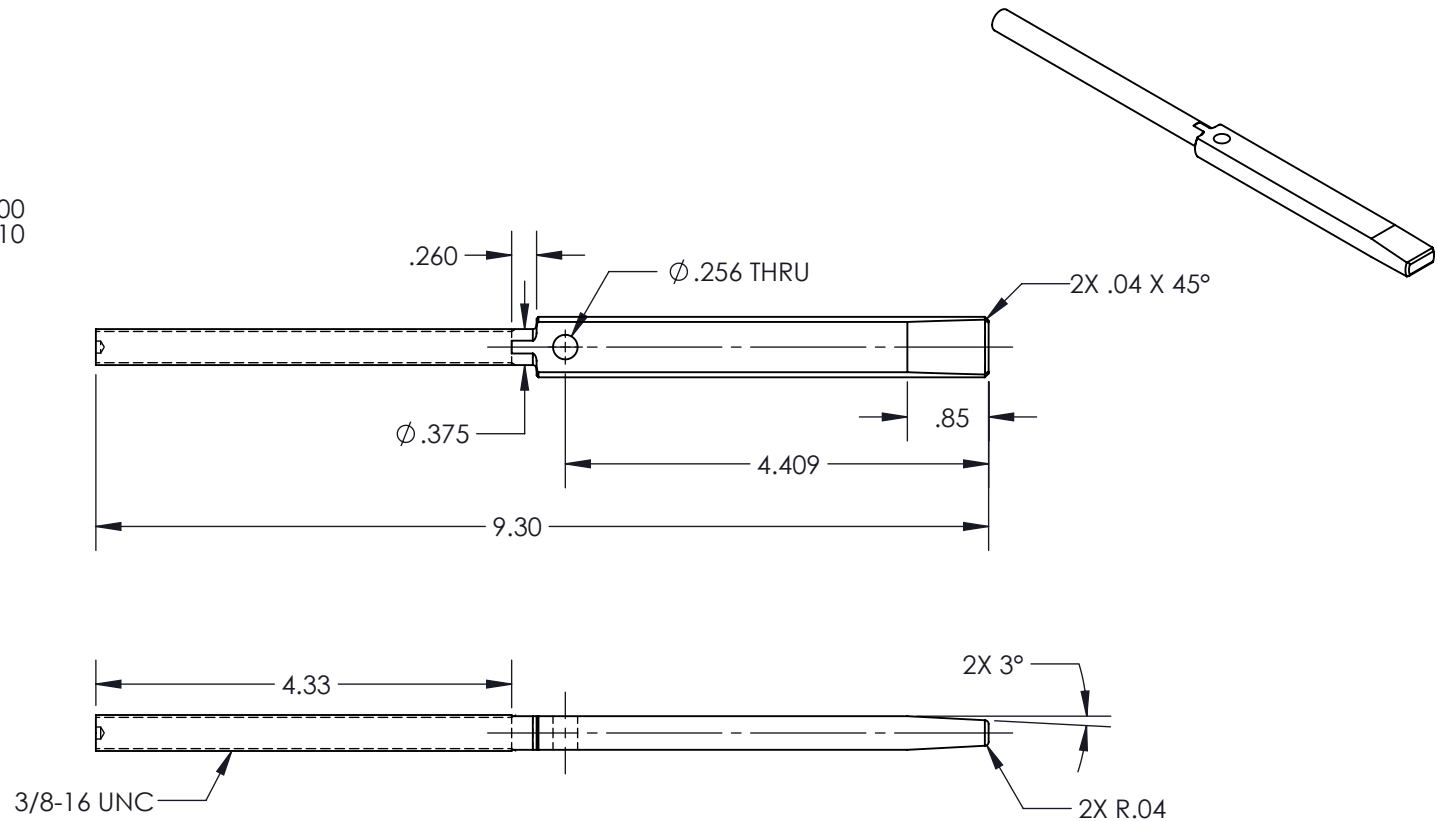
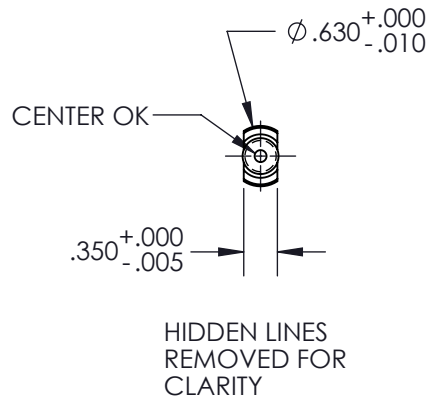
HOUSING

<b>DART</b> AEROSPACE	
TITLE TAIL ROTOR BUSHING REMOVAL TOOL	
DWG NO. RBW109-3130-82-103-3	REV <b>2</b>
MAT'L 6061	DRAWN BY: PERRITT
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES	APPROVED <i>D Weil</i>
.XXX ± .005 FRACTIONS ± 1/8	HEAT TREAT
.XX ± .01 ANGLES ± 5°	FINISH CLEAR ANODIZE
.X ± .1	SPEC MIL-A-8625F, TYPE II, CLASS I
1. BREAK ALL SHARP EDGES .015 x 45° OR .015R	USED ON MODEL
2. DIMENSIONAL LIMITS APPLY AFTER PLATING	AW109, AW119
SCALE 1:1	DATE 8/26/2010
SHEET 3 OF 6	

This drawing, specifications, and concepts contained here in are the sole property of Dart Aerospace, and may not be reproduced or used in any fashion without the prior written permission of Dart Aerospace Eugene, OR.

REVISIONS			
REV	ECR	DESCRIPTION	DATE
			INITIAL
			APPROVED

**SEE ATTACHED DEVIATION**



**UNDER REVIEW**

URF 19-939 19.10.23 (VM)

(5)

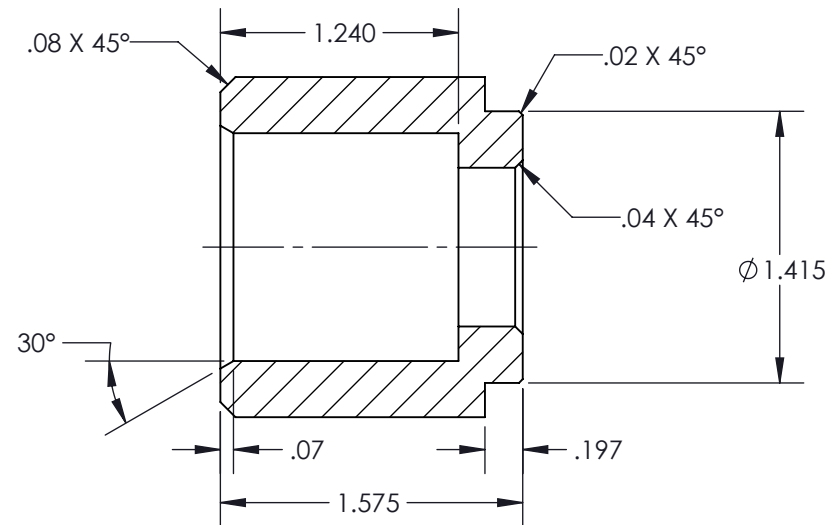
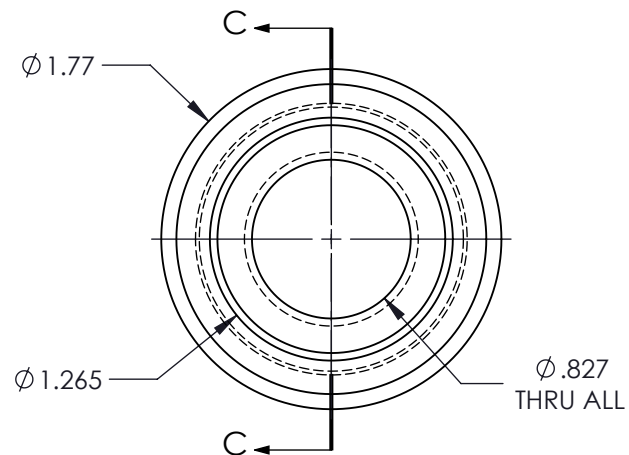
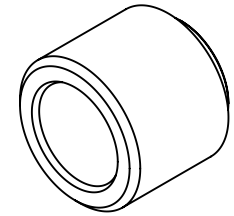
EXTRACTOR ROD

<b>DART</b> AEROSPACE	
TITLE TAIL ROTOR BUSHIN REMOVAL TOOL	
DWG NO. RBW109-3130-82-103-5	REV 2
MAT'L 4140/4142	DRAWN BY: GILBERT
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES	APPROVED <i>P. Weil</i>
.XXX ± .005 FRACTIONS ± 1/8	HEAT TREAT RC 30-36
.XX ± .01 ANGLES ± .5°	FINISH CAD PLATE YELLOW
.X ± .1	SPEC QQ-P-416F, TYPE II, CLASS II
1. BREAK ALL SHARP EDGES .015 x 45° OR .015R	USED ON MODEL
2. DIMENSIONAL LIMITS APPLY AFTER PLATING	AW109, AW119
SCALE 1:2	DATE 8/26/2010
SHEET 4 OF 6	

This drawing, specifications, and concepts contained here in are the sole property of Dart Aerospace, and may not be reproduced or used in any fashion without the prior written permission of Dart Aerospace Eugene, OR.

REVISIONS				
REV	ECR	DESCRIPTION	DATE	INITIAL

**SEE ATTACHED DEVIATION**



SECTION C-C


**UNDER REVIEW**

URF 19-939 19.10.23 (VM)

(-7)

SMALL HOUSING

<b>DART AEROSPACE</b>	
TITLE TAIL ROTOR BUSHING REMOVAL TOOL	
DWG NO. RBW109-3130-82-103-7	REV <b>2</b>
MAT'L 6061	DRAWN BY: PERRITT
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES	APPROVED <i>D Weil</i>
.XXX ± .005 FRACTIONS ± 1/8	HEAT TREAT
.XX ± .01 ANGLES ± 5°	FINISH CLEAR ANODIZE
.X ± .1	SPEC MIL-A-8625F, TYPE II, CLASS I
1. BREAK ALL SHARP EDGES .015 x 45° OR .015R	USED ON MODEL
2. DIMENSIONAL LIMITS APPLY AFTER PLATING	AW109, AW119
SCALE 1:1	DATE 8/26/2010
SHEET 5 OF 6	

			
TITLE TAIL ROTOR BUSHING REMOVAL TOOL			
DWG NO. RBW109-3130-82-103-9			REV 2
MAT'L 4140/4142		DRAWN BY: PERRITT	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES		APPROVED <i>D Weir</i>	
.XXX ± .005 .XX ± .01 .X ± .1	FRACTIONS ± 1/8 ANGLES ± .5°	HEAT TREAT RC 38-42 FINISH CAD PLATE YELLOW	
1. BREAK ALL SHARP EDGES .015 x 45° OR .015R 2. DIMENSIONAL LIMITS APPLY AFTER PLATING		SPEC QQ-P-416F, TYPE II, CLASS II USED ON MODEL AW109, AW119	
SCALE 1:1	DATE 8/26/2010	SHEET 6 OF 6	

DQA: \_\_\_\_\_ Date: \_\_\_\_\_

**WORK ORDER NON-CONFORMANCE / UPDATE**

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

Work Order update only ☐

Work Order: _____  Part No. <u>RBW109-3130-82-103 Rev. 2</u>  NCR No. _____		<b>DISPOSITION</b>  Rework <input type="checkbox"/> Scrap <input type="checkbox"/> Use-as-is <input type="checkbox"/> Suspected Unapproved <input type="checkbox"/>		<b>AGAINST DEPARTMENT/PROCESS</b>  <table style="width:100%; border: none;"> <tr> <td style="border: none;">Skid-tube <input type="checkbox"/></td> <td style="border: none;">Cross tube <input type="checkbox"/></td> <td style="border: none;">Water Jet <input type="checkbox"/></td> <td style="border: none;">Engineering <input type="checkbox"/></td> </tr> <tr> <td style="border: none;">Machining <input type="checkbox"/></td> <td style="border: none;">Small Fab <input type="checkbox"/></td> <td style="border: none;">Prod. Eng. Coord. <input type="checkbox"/></td> <td style="border: none;">Quality <input type="checkbox"/></td> </tr> <tr> <td style="border: none;">Thermoforming <input type="checkbox"/></td> <td style="border: none;">Finishing <input type="checkbox"/></td> <td style="border: none;">Rec/Store/Packaging <input type="checkbox"/></td> <td style="border: none;">Other <input type="checkbox"/></td> </tr> <tr> <td style="border: none;">Large Fab <input type="checkbox"/></td> <td style="border: none;">Composite <input type="checkbox"/></td> <td style="border: none;">Supplier <input type="checkbox"/></td> <td style="border: none;"></td> </tr> </table>						Skid-tube <input type="checkbox"/>	Cross tube <input type="checkbox"/>	Water Jet <input type="checkbox"/>	Engineering <input type="checkbox"/>	Machining <input type="checkbox"/>	Small Fab <input type="checkbox"/>	Prod. Eng. Coord. <input type="checkbox"/>	Quality <input type="checkbox"/>	Thermoforming <input type="checkbox"/>	Finishing <input type="checkbox"/>	Rec/Store/Packaging <input type="checkbox"/>	Other <input type="checkbox"/>	Large Fab <input type="checkbox"/>	Composite <input type="checkbox"/>	Supplier <input type="checkbox"/>																																															
Skid-tube <input type="checkbox"/>	Cross tube <input type="checkbox"/>	Water Jet <input type="checkbox"/>	Engineering <input type="checkbox"/>																																																																				
Machining <input type="checkbox"/>	Small Fab <input type="checkbox"/>	Prod. Eng. Coord. <input type="checkbox"/>	Quality <input type="checkbox"/>																																																																				
Thermoforming <input type="checkbox"/>	Finishing <input type="checkbox"/>	Rec/Store/Packaging <input type="checkbox"/>	Other <input type="checkbox"/>																																																																				
Large Fab <input type="checkbox"/>	Composite <input type="checkbox"/>	Supplier <input type="checkbox"/>																																																																					
Date :		Step #:		QTY Effective :		<b>MRB (QSI042) Approval</b>  Jan 28, 2019																																																																	
<b>Description Work Order Deviation</b>				<b>Disposition</b>																																																																			
RBW109-3130-82-103-9 can be manufactured from 17-4PH-H900 as an alternative material  Cad plating is not required if the part is manufactured from 17-4PH-H900				- This deviation is acceptable.  - The fit, form and function of the part will be as originally intended.				<b>Completed By</b>																																																															
								<b>Lead hand / Supervisor Approval Verification</b> URF 19-939																																																															
								<b>QC / QA Coordinator Approval</b> 19.10.23 (VM)																																																															
<b>Root Cause</b> <table style="width:100%; border: none;"> <tr> <td style="border: none;">Environment <input type="checkbox"/></td> <td style="border: none;">No Re-verification <input type="checkbox"/></td> </tr> <tr> <td style="border: none;">Design <input checked="" type="checkbox"/></td> <td style="border: none;">Operator <input type="checkbox"/></td> </tr> <tr> <td style="border: none;">Doc/Data <input type="checkbox"/></td> <td style="border: none;">Offset/Setup <input type="checkbox"/></td> </tr> <tr> <td style="border: none;">Equip/Tooling <input type="checkbox"/></td> <td style="border: none;">Supplier <input type="checkbox"/></td> </tr> <tr> <td style="border: none;">Handling/Pre <input type="checkbox"/></td> <td style="border: none;">Training <input type="checkbox"/></td> </tr> <tr> <td style="border: none;">Material <input checked="" type="checkbox"/></td> <td style="border: none;">Use for Testing <input type="checkbox"/></td> </tr> <tr> <td style="border: none;">Internal Transport <input type="checkbox"/></td> <td style="border: none;">Poor Information <input type="checkbox"/></td> </tr> <tr> <td style="border: none;">Tribal Knowledge <input type="checkbox"/></td> <td style="border: none;">Rushing <input type="checkbox"/></td> </tr> <tr> <td style="border: none;">LOA <input type="checkbox"/></td> <td style="border: none;">Product Improvement <input type="checkbox"/></td> </tr> <tr> <td style="border: none;">Substation <input type="checkbox"/></td> <td style="border: none;">Process Improvement <input type="checkbox"/></td> </tr> <tr> <td style="border: none;">Past Expiry Date <input type="checkbox"/></td> <td style="border: none;">Manufacturing Process <input type="checkbox"/></td> </tr> <tr> <td style="border: none;">Misidentified <input type="checkbox"/></td> <td style="border: none;">Past Due <input type="checkbox"/></td> </tr> </table>				Environment <input type="checkbox"/>	No Re-verification <input type="checkbox"/>	Design <input checked="" type="checkbox"/>	Operator <input type="checkbox"/>	Doc/Data <input type="checkbox"/>	Offset/Setup <input type="checkbox"/>	Equip/Tooling <input type="checkbox"/>	Supplier <input type="checkbox"/>	Handling/Pre <input type="checkbox"/>	Training <input type="checkbox"/>	Material <input checked="" type="checkbox"/>	Use for Testing <input type="checkbox"/>	Internal Transport <input type="checkbox"/>	Poor Information <input type="checkbox"/>	Tribal Knowledge <input type="checkbox"/>	Rushing <input type="checkbox"/>	LOA <input type="checkbox"/>	Product Improvement <input type="checkbox"/>	Substation <input type="checkbox"/>	Process Improvement <input type="checkbox"/>	Past Expiry Date <input type="checkbox"/>	Manufacturing Process <input type="checkbox"/>	Misidentified <input type="checkbox"/>	Past Due <input type="checkbox"/>	<b>FAULT CATEGORY</b> <table style="width:100%; border: none;"> <tr> <td style="border: none;">Pressure/Forced <input type="checkbox"/></td> <td style="border: none;">Temperature/Cure <input type="checkbox"/></td> <td style="border: none;">Power Loss/Surge <input type="checkbox"/></td> <td style="border: none;">Positioned Wrong <input type="checkbox"/></td> </tr> <tr> <td style="border: none;">Bending <input type="checkbox"/></td> <td style="border: none;">Set-up <input type="checkbox"/></td> <td style="border: none;">Folio/Program <input type="checkbox"/></td> <td style="border: none;">Outside Dimensions <input type="checkbox"/></td> </tr> <tr> <td style="border: none;">Centre Not Concentric <input type="checkbox"/></td> <td style="border: none;">BOM/Route <input type="checkbox"/></td> <td style="border: none;">Grain <input type="checkbox"/></td> <td style="border: none;">Over/Under tolerance <input type="checkbox"/></td> </tr> <tr> <td style="border: none;">Cracks <input type="checkbox"/></td> <td style="border: none;">Broken/Damage/Defect <input type="checkbox"/></td> <td style="border: none;">Weld <input type="checkbox"/></td> <td style="border: none;">Part Incorrect <input type="checkbox"/></td> </tr> <tr> <td style="border: none;">Crimp/Kink/Ripple/Wave <input type="checkbox"/></td> <td style="border: none;">Inspection Incomplete/Unqualified <input type="checkbox"/></td> <td style="border: none;">Wrong Stock Pulled <input type="checkbox"/></td> <td style="border: none;">Part Lost/Missing <input type="checkbox"/></td> </tr> <tr> <td style="border: none;">Cuffs <input type="checkbox"/></td> <td style="border: none;">Contamination <input type="checkbox"/></td> <td style="border: none;">Out of Sequence <input type="checkbox"/></td> <td style="border: none;">Part Moved <input type="checkbox"/></td> </tr> <tr> <td style="border: none;">Crushing <input type="checkbox"/></td> <td style="border: none;">Countersink <input type="checkbox"/></td> <td style="border: none;">Off-set <input type="checkbox"/></td> <td style="border: none;">Drawing <input type="checkbox"/></td> </tr> <tr> <td style="border: none;">Heat Treat <input type="checkbox"/></td> <td style="border: none;">Cut Too Short <input type="checkbox"/></td> <td style="border: none;">Mislabeled <input type="checkbox"/></td> <td style="border: none;">Finish <input type="checkbox"/></td> </tr> <tr> <td style="border: none;">Wave/Twist in Tube <input type="checkbox"/></td> <td style="border: none;">Instructions Incomplete/Unclear <input type="checkbox"/></td> <td style="border: none;">Fit/Function <input type="checkbox"/></td> <td style="border: none;">Misread <input type="checkbox"/></td> </tr> <tr> <td style="border: none;">Marks/Chatter <input type="checkbox"/></td> <td style="border: none;">Drill Holes <input type="checkbox"/></td> <td style="border: none;">Misaligned/off center <input type="checkbox"/></td> <td style="border: none;">Turning Sequence <input type="checkbox"/></td> </tr> </table>				Pressure/Forced <input type="checkbox"/>	Temperature/Cure <input type="checkbox"/>	Power Loss/Surge <input type="checkbox"/>	Positioned Wrong <input type="checkbox"/>	Bending <input type="checkbox"/>	Set-up <input type="checkbox"/>	Folio/Program <input type="checkbox"/>	Outside Dimensions <input type="checkbox"/>	Centre Not Concentric <input type="checkbox"/>	BOM/Route <input type="checkbox"/>	Grain <input type="checkbox"/>	Over/Under tolerance <input type="checkbox"/>	Cracks <input type="checkbox"/>	Broken/Damage/Defect <input type="checkbox"/>	Weld <input type="checkbox"/>	Part Incorrect <input type="checkbox"/>	Crimp/Kink/Ripple/Wave <input type="checkbox"/>	Inspection Incomplete/Unqualified <input type="checkbox"/>	Wrong Stock Pulled <input type="checkbox"/>	Part Lost/Missing <input type="checkbox"/>	Cuffs <input type="checkbox"/>	Contamination <input type="checkbox"/>	Out of Sequence <input type="checkbox"/>	Part Moved <input type="checkbox"/>	Crushing <input type="checkbox"/>	Countersink <input type="checkbox"/>	Off-set <input type="checkbox"/>	Drawing <input type="checkbox"/>	Heat Treat <input type="checkbox"/>	Cut Too Short <input type="checkbox"/>	Mislabeled <input type="checkbox"/>	Finish <input type="checkbox"/>	Wave/Twist in Tube <input type="checkbox"/>	Instructions Incomplete/Unclear <input type="checkbox"/>	Fit/Function <input type="checkbox"/>	Misread <input type="checkbox"/>	Marks/Chatter <input type="checkbox"/>	Drill Holes <input type="checkbox"/>	Misaligned/off center <input type="checkbox"/>	Turning Sequence <input type="checkbox"/>
Environment <input type="checkbox"/>	No Re-verification <input type="checkbox"/>																																																																						
Design <input checked="" type="checkbox"/>	Operator <input type="checkbox"/>																																																																						
Doc/Data <input type="checkbox"/>	Offset/Setup <input type="checkbox"/>																																																																						
Equip/Tooling <input type="checkbox"/>	Supplier <input type="checkbox"/>																																																																						
Handling/Pre <input type="checkbox"/>	Training <input type="checkbox"/>																																																																						
Material <input checked="" type="checkbox"/>	Use for Testing <input type="checkbox"/>																																																																						
Internal Transport <input type="checkbox"/>	Poor Information <input type="checkbox"/>																																																																						
Tribal Knowledge <input type="checkbox"/>	Rushing <input type="checkbox"/>																																																																						
LOA <input type="checkbox"/>	Product Improvement <input type="checkbox"/>																																																																						
Substation <input type="checkbox"/>	Process Improvement <input type="checkbox"/>																																																																						
Past Expiry Date <input type="checkbox"/>	Manufacturing Process <input type="checkbox"/>																																																																						
Misidentified <input type="checkbox"/>	Past Due <input type="checkbox"/>																																																																						
Pressure/Forced <input type="checkbox"/>	Temperature/Cure <input type="checkbox"/>	Power Loss/Surge <input type="checkbox"/>	Positioned Wrong <input type="checkbox"/>																																																																				
Bending <input type="checkbox"/>	Set-up <input type="checkbox"/>	Folio/Program <input type="checkbox"/>	Outside Dimensions <input type="checkbox"/>																																																																				
Centre Not Concentric <input type="checkbox"/>	BOM/Route <input type="checkbox"/>	Grain <input type="checkbox"/>	Over/Under tolerance <input type="checkbox"/>																																																																				
Cracks <input type="checkbox"/>	Broken/Damage/Defect <input type="checkbox"/>	Weld <input type="checkbox"/>	Part Incorrect <input type="checkbox"/>																																																																				
Crimp/Kink/Ripple/Wave <input type="checkbox"/>	Inspection Incomplete/Unqualified <input type="checkbox"/>	Wrong Stock Pulled <input type="checkbox"/>	Part Lost/Missing <input type="checkbox"/>																																																																				
Cuffs <input type="checkbox"/>	Contamination <input type="checkbox"/>	Out of Sequence <input type="checkbox"/>	Part Moved <input type="checkbox"/>																																																																				
Crushing <input type="checkbox"/>	Countersink <input type="checkbox"/>	Off-set <input type="checkbox"/>	Drawing <input type="checkbox"/>																																																																				
Heat Treat <input type="checkbox"/>	Cut Too Short <input type="checkbox"/>	Mislabeled <input type="checkbox"/>	Finish <input type="checkbox"/>																																																																				
Wave/Twist in Tube <input type="checkbox"/>	Instructions Incomplete/Unclear <input type="checkbox"/>	Fit/Function <input type="checkbox"/>	Misread <input type="checkbox"/>																																																																				
Marks/Chatter <input type="checkbox"/>	Drill Holes <input type="checkbox"/>	Misaligned/off center <input type="checkbox"/>	Turning Sequence <input type="checkbox"/>																																																																				
OTHER : _____																																																																							

UNDER REVIEW